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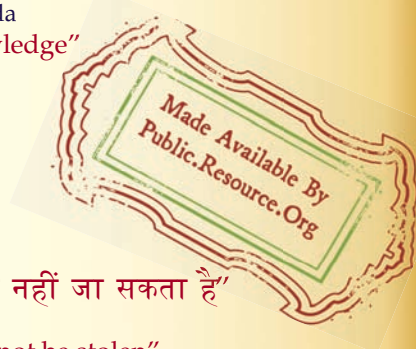
IS 7472 (1986): Pig Feeds [FAD 5: Livestock Feeds, Equipment and Systems]



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(Reaffirmed 2001)

Indian Standard
SPECIFICATION FOR
PIG FEEDS
(*First Revision*)

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Indian Standard

SPECIFICATION FOR PIG FEEDS

(*First Revision*)

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(*Continued on page 2*)

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(Continued on page 12)

Indian Standard
SPECIFICATION FOR
PIG FEEDS
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 28 November 1986, after the draft finalized by the Animal Feeds Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Piggery development is making a rapid progress within the country. A large number of farms have been established where pig rearing and breeding has been undertaken on scientific lines. It is important that for the production of good quality pork at minimum cost, the pigs are properly fed so as to meet their nutritional requirements. To keep pace with the piggery development, the manufacture of compound pig feeds and their marketing has also commenced in the country. Therefore, with a view to enable the manufacturers to prepare pig feeds of known quality, this Indian Standard has been prepared.

0.3 This standard was first published in 1974. In this revision, moisture content has been increased. For the sake of uniformity in testing, reference has been given to IS : 7874 (Part 1)-1975*.

0.4 The Committee responsible for this standard is seized of the aflatoxin problem. The safe limit and the reliable method for its estimation will be included in the standard no sooner these are finalized.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Methods of tests for animal feeds and feeding stuffs : Part 1 General methods.

†Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard prescribes the requirements, and methods of sampling and test for pig feeds.

2. TYPES

2.1 Pig feeds shall be of the following three types :

- a) *Pig Starter/Creep Feed* — A ration to be fed up to 20 kg live mass when the litter is with sow,
- b) *Pig Growth Meal* — A ration to be fed from weaning to 35 kg live mass, and
- c) *Pig Finishing/Breeding Meal* — A ration to be fed to pigs over 35 kg live mass.

3. REQUIREMENTS

3.1 **General** — Pig feeds shall be in the form of pellets, cubes, crumbs or meal. The feeds shall be free from rancidity, musty odour, harmful constituents, such as dust, metallic pieces, adulterants, insect infestation and visible fungus growth.

3.2 **Ingredients** — The ingredients given in Appendix A shall only be used for manufacturing pig feeds. Urea and other non-nitrogenous substances, except amino-acids, shall not be added to the product.

3.2.1 If antibiotics or other additives are incorporated into the feeds, these shall be declared on the label. The level of antibiotics added shall not exceed 100 parts per million.

3.3 The material shall also conform to the requirements prescribed in Table 1.

3.4 The characteristics listed in Table 2 either from the natural sources or from any added sources shall be declared by the manufacturer after periodic testing, in proportions indicated against each.

3.5 Pig feeds shall contain the following in quantity (*see* Table 3) not less than the value shown against each.

3.5.1 The manufacturer shall declare on the label (*see* 3.5) the above mentioned constituents on the basis of additions made in the feed.

4. PACKING AND MARKING

4.1 **Packing** — Pig feeds shall be packed in dry, clean and sound plain or polyethylene lined jute or laminated paper bags or HDPE bags. The

mouth of each bag shall be either machine-stitched or rolled over and hand-stitched.

TABLE 1 REQUIREMENTS FOR PIG FEEDS

(Clause 3.3)

SL No.	CHARACTERISTIC	REQUIREMENT			METHOD OF TEST, REF TO	
		Pig Starter/ Creep Feed	Pig Growth Meal	Pig Finish-ing/ Breed-ing Meal	Appendix of this Standard	Cl No. in IS : 7874 (Part 1) - 1975*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Moisture content, percent by mass, <i>Max</i>	11.0	11.0	11.0	—	4
ii)	Crude protein ($N_2 \times 6.25$), percent by mass, <i>Min</i>	20.0	18.0	16.0	—	5
iii)	Crude fat or ether extract, percent by mass, <i>Min</i>	2.0	2.0	2.0	—	7
iv)	Crude fibre, percent by mass, <i>Max</i>	5.0	6.0	8.0	—	8
v)	Total ash, percent by mass, <i>Max</i>	8.0	8.0	8.0	—	9
vi)	Acid insoluble ash, percent by mass, <i>Max</i>	4.0	4.0	4.0	—	10
vii)	Metabolizable energy (k cal/kg), <i>Min</i>	3 360	3 170	3 170	B	—

NOTE — The values specified for requirements (ii) to (vi) are on moisture-free basis.

*Methods of tests for animal feeds and feeding stuffs : Part 1 General methods.

TABLE 2 REQUIREMENTS FOR PIG FEEDS TO BE DECLARED

(Clause 3.4)

SL No.	CHARACTERISTIC	REQUIREMENT			METHOD OF TEST, REF TO CL No. IN IS : 7874 (PART 2) - 1975*
		Pig Starter/ Creep Feed	Pig Growth Meal	Pig Finish- ing/ Breed- ing Meal	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Calcium (as Ca), per- cent by mass, <i>Min</i>	0.6	0.6	0.6	5
ii)	Available phosphorus, percent by mass, <i>Min</i>	0.6	0.4	0.5	6
iii)	Iron (as Fe), mg/kg, <i>Min</i>	100	90	80	7
iv)	Copper, mg/kg, <i>Min</i>	8	6	6	9
v)	Manganese, mg/kg, <i>Min</i>	30	30	20	10
vi)	Zinc, mg/kg, <i>Min</i>	50	50	50	13
vii)	Common salt (as NaCl), percent by mass, <i>Max</i>	0.5	0.5	0.5	4

NOTE — The values specified for characteristics (i) to (vii) are on moisture free-basis.

*Methods of tests for animal feeds and feeding stuffs : Part 2 Minerals and trace elements.

4.2 Marking — Each bag shall be marked or labelled legibly and indelibly so as to give the following information :

- Name and type of the material;
- Name of the manufacturer;
- Quantity of antibiotics or other additives, if added (see 3.2.1);
- Net mass of contents, when packed;
- Batch or code number; and
- Declaration (see Table 2, and clauses 3.2 and 3.5).

TABLE 3 REQUIREMENTS FOR PIG FEEDS

(Clause 3.5)

Sl. No.	CHARACTERISTICS	REQUIREMENTS		
		Pig Starter/ Creep Feed	Pig Growth Meal	Pig Finish- ing/Breed- ing Meal
(1)	(2)	(3)	(4)	(5)
i)	Niacin, mg/kg	17	14	10
ii)	Pantothenic acid, mg/kg	11	10	10
iii)	Riboflavin, mg/kg	3	2.4	2.2
iv)	Vitamin B ₁₂ activity, µg/kg	15	11	11
v)	Vitamin A, IU/kg	1 700	1 300	1 300
vi)	Vitamin D, IU/kg	190	180	130

4.2.1 Each bag may also be marked with the Standard Mark.

NOTE — The use of Standard Mark is governed by the provision of the Bureau of Indian Standards Act, 1986 Rules and Regulations made thereunder. The BIS Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. BIS marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the BIS Certification Mark may be granted to manufacturers or processors may be obtained from the Bureau of Indian Standards.

SAMPLING

5.1 The method of drawing representative samples of the material and the criteria for conformity shall be according to the method prescribed in Appendix C of IS : 2052-1979*.

6. TESTS

6.1 Tests shall be carried out as prescribed in col 6 and 7 of Table 1 and col 6 of Table 2.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (see IS : 1070-1977†) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

*Specification for compounded feeds for cattle (*third revision*).

†Specification for water for general laboratory use (*second revision*).

APPENDIX A

(Clause 3.2)

INGREDIENTS FOR PIG FEEDS

Grain and Seeds

Bajra, Bajri (*Pennisetum typhoides*)
Barley (*Hordeum vulgare*)
Black gram (*Phaseolus mungo*)
Chinna, Cheena (*Panicum miliaceum*)
Kulthi or Horse gram (*Dolichos biflorus*)
Jowar, Chola (*Sorghum vulgare*)
Oats (*Avena sterilis*)
Panwar (*Cassia tora*)
Ragi (*Eleusine coracana*)
Yellow maize
Sawa (*Echinochloa colona*)

Grain By-products

Arhar chuni
Black gram chuni
Gram chuni
Gram screenings
Maize bran, maize gluten and maize gluten feed
Rice bran or solvent extracted rice bran and polishings
Wheat bran

Oil Cakes and Meals

Copra cake, coconut cake (expeller-pressed or solvent extracted)
Cottonseed oil cake (decorticated) (expeller-pressed or solvent extracted)—up to 5 percent by mass
Groundnut oil cake (expeller-pressed or solvent extracted)
Guar (*Cyamopsis tetragonoloba*) — up to 5 percent by mass

Maize germ oil cake

Mustard cake

Safflower (*Carthamus tinctorius*) cake (expeller-pressed or solvent extracted)

Sesamum (*Sesamum indicum orientale*) cake (expeller-pressed or solvent extracted)

Tubers and Roots

Tapioca flour

Animal Products

Blood meal

Fish meal

Liver residue

Meat meal and meat scrap

Greens

Berseem (*Trifolium alexandrium*) leaf meal

Lucerne (*Medicago sativa*) leaf meal

Panwar (*Cassia tora*) leaf meal

Dhaincha (*Sesbania grandiflora*) (dried)

Spinach (dried)

Minerals, Vitamins and Supplements

Bonemeal (steamed)

Common salt

Dicalcium phosphate (fluorine content not to exceed 0.05 percent)

Limestone

Oyster shells

Vitamins (mineral-stabilized)

Waste Materials and Industrial By-products

Brewers' grains

Dried yeast and yeast sludge
Mango seed kernel
Mahua flower residue
Molasses (Khandsari type)
Penicillin mycelium residue
Dried silkworm pupae

APPENDIX B

[Table 1, Item (vii)]

DETERMINATION OF METABOLIZABLE ENERGY (ME)

B-1. APPARATUS

B-1.1 Brooder — Battery or floor type.

B-1.2 Glass Bottles — Stoppered, wide-mouthed.

B-2. REAGENTS

B-2.1 Acetic Acid — 2 percent.

B-2.2 Sulphuric Acid — 5 percent.

B-3. PROCEDURE

B-3.1 Place 25 three-week old healthy chicks (white leghorn or Rhode Island Red) in a brooder and rear them on the experimental feed for an 8-day acclimatization period. Then on the second day of the fifth week, give the chicks the requisite amount of accurately weighed experimental feed at a fixed hour in the morning. Simultaneously, spread the polyethylene sheets on the faeces trays for the collection of excreta. Collect a representative sample of feed for dry matter percentage and proximate analysis. Next day at the same hour collect the remaining feed and the faeces excreted and weigh them. A representative sample of the remaining feed is again collected for dry matter percentage. The difference in dry mass of feed offered, and the remaining feed gives the amount of dry matter consumed during 24 hours. Collect the aliquots from excreta, after mixing it well, for dry matter and nitrogen estimation separately (one-twentieth and one-hundredth parts respectively) in wide-mouthed and glass-stoppered bottles, and keep them in a refrigerator.

For nitrogen estimation, samples in duplicate should be preserved in 5 percent sulphuric acid.

NOTE — The age of the birds during the collection period may vary from 5 to 10 weeks, but this does not affect the ME value significantly.

B-3.2 Repeat the same procedure on the next two alternate days and pool together the three-day samples of excreta for the analysis. For dry matter estimation, add about 10 ml of 2 percent acetic acid for every 50 g of the excreta and dry it in an oven at about 80°C till constant mass is obtained. Find out the total dry matter voided in three days.

B-3.3 Analyze the samples of feed and the excreta for their crude protein, ether extract, total ash and total carbohydrate content. Calculate on dry matter basis.

B-4. CALCULATION

B-4.1 Calculate gross calories in feed and excreta. The calorific values of crude protein, ether extract and total carbohydrates are 5.65, 9.40 and 4.15 cal/g respectively.

$$\text{Metabolizable energy per kg} = (E_{\text{diet}} - E_{\text{excreta}} - N \times 8.22) \text{ of feed}$$

where

E_{diet} = gross calories per g of feed (dry matter),

E_{excreta} = gross calories in excreta per g of the feed (dry matter) consumed, and

N = nitrogen retention in g per g of feed (dry matter) consumed. This is obtained by subtracting total nitrogen excreted from the total nitrogen consumed per gram of the feed (dry matter).

(Continued from page 2)

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